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THE DUKE OF BEDFORD'S MENAGERIE AT WOBURN ABBEY.

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ZOOLOGICAL Gardens are excellent institutions, but, like nearly all excellent institutions, they have their imperfections. One of the disabilities under which they labour is the impossibility of giving sufficient space to the large herbivorous mammals, such as Deer and Antelopes; so that it is impossible to see these animals in anything approaching their natural haunts, and thus to learn something of their ways and mode of life. Even if the required space were available, it would of course be impracticable in an ordinary menagerie to turn out the animals in any sort of park where the public would be able to see them. What is thus difficult to accomplish in a public menagerie, however, is possible in a private park, if only the owner possesses sufficient means, and sufficient interest in zoological science to make the experiment.

Most readers are doubtless acquainted by name with Woburn Abbey, the ancestral seat of the Dukes of Bedford; but it is probably less well known that this extensive and beautifully-timbered domain contains at the present time a collection of wild animals which in this country can be rivalled only by the well-known gardens in the Regent's Park. Instead, however, of being cooped up within the narrow limits of small paddocks, such of the animals as exhibit an amenable disposition, and show

no tendency to quarrel with their imported fellows, or with the herds of Red and Fallow Deer for which Woburn has long been famed, are allowed to roam at their own sweet will over the entire Deer-park, although others are restricted to a smaller area.

Fortunately the park itself is most admirably adapted for the acclimatization of animals of all kinds. Not only is it, as already said, beautifully timbered, but it comprises an alternation of hill and dale with wide-spreading flats of open grass-land, and masses of bracken and other covert. Lakes, too, of different sizes and shapes are dotted here and there over the landscape; while, as some of the ridges are formed of dry sand and sandstone, and the flats consist of clayey beds, animals must be hard to please indeed if they cannot find localities suited to their particular disposition.

With such natural surroundings, and with the freedom accorded them, it is but natural that the Deer and Antelopes—which form the most attractive feature of the Woburn collection, so far as mammals are concerned—are in much better bodily condition than their relatives in the Regent's Park. Here, too, the naturalist can see them in many cases under conditions more or less resembling those of their native lands, although, of course, the vegetable surroundings are in some instances different. Perhaps the most marked and interesting instance is afforded by the Elk, of which there are several. On most days these huge ungainly ruminants may be seen standing belly-deep in one of the lakes, lazily cropping the water-plants that come within reach of their extensile lips. The naturalist is thus enabled at a glance to see at least one use of the excessively long limbs of the Elk, which enable it to wade into depths where most animals would be drowned outright. Of course he has read over and over again that such is the natural habit of the creature, but till he has actually seen it, the picture can never become fully impressed on his mind.

Another sight worth walking miles to behold was a party of three or four Sable Antelopes feeding among a mass of bracken in a secluded glen, and looking as much at home as if on their native veldt. Then, for the first time, one realised the full beauty of this fine Antelope, and appreciated Gordon Cumming's raptures when he first obtained a glimpse of a herd. Not less interesting are three magnificent specimens of Burchell's Zebra,

which are allowed to roam at large about the park, and appeared to be on most excellent terms with the various herds of Deer. Travellers in Africa tell us that the striped hide of these animals—so conspicuous at close quarters—at a distance fades completely away on background of the dry veldt. Hitherto one had to take this statement on trust; and it was a great pleasure to see it actually verified at Woburn, where the parched grass of a dry August not unfairly resembled an African plain. A fourth Zebra is also included in the collection, but as this animal runs up to all horses in sight, it is kept with some horses in an enclosure.

In another enclosure near by is a single example of the Kiang or Wild Ass of Tibet, a species which has, I believe, only once been exhibited in the Regent's Park Gardens, and that so far back as 1859. The Kiang at Woburn, I am told, is possessed of a very uncertain temper; and it is for this reason that it is not turned out in the park. This does not seem to be quite in accord with what occurs in the wild state, for in Ladak herds of Kiang will gallop in circles close round the traveller's pony, and thus often spoil the chance of obtaining a shot at more worthy game.

Another animal of great interest is the small Wild Ox of Celebes, known as the Anoa, of which there are two beautiful examples, so tame as to allow themselves to be approached and stroked. Very rarely is this Ox seen in menageries, only two examples having been exhibited in our Zoological Gardens up to the year 1883—the date when the last complete list of the animals there was published. It is somewhat remarkable to find species hailing from such widely different regions as the elevated dry plateau of Tibet—the habitat of the Kiang—and the moist tropical island of Celebes, but nevertheless both seemed equally flourishing in the Bedfordshire park. Indeed, I was informed that almost the only large ruminants that do not flourish well there are most kinds of Sheep, to which rocky upland ground seems essential to good health. Most of the Goats seem, on the other hand, to do well, and there are some Tahr (*Hemitragus jemlaicus*) in excellent condition, while an Aoudad (*Ovis tragelaphus*) seemed equally flourishing.

The Bhural—which breed in the Regent's Park—were, however, decidedly in poor condition; much the same might be said

of the Corsican Mouflon. Ibex are represented only by a half-breed, which has apparently become well accustomed to a lowland life. To return to the Anoa, the general appearance and ways of these pretty little animals gave a better idea than I had ever conceived before of their near affinity to the Buffaloes.

To give a complete list of the mammals now flourishing in this naturalist's paradise would be tedious to the reader, and remaining remarks must accordingly be restricted to some of those which especially attracted notice. Of the *Cervidæ*, in addition to fine herds of Red and Fallow Deer—among which were noticeable a white breed—the collection comprises some fine examples of the American Wapiti, one of which, at the time of our visit, had just grown a magnificent pair of antlers, and was "roaring" in grand style. More interesting still is a fine, although immature, bright bay Stag from Manchuria, which appears to indicate an undescribed species. Manchurian Deer (*Cervus manchuricus*), and their smaller ally, the pretty little Japanese Deer (*C. sika*), are abundantly represented, and go about with the Red Deer, with which they interbreed. And here it may be mentioned that, in the case of some of the rarer kinds, the noble owner preserves the shed antlers annually, by which means a series of specimens of extreme value to the naturalist will ere long be obtained. The condition of both the Manchurian and Japanese Deer is unrivalled, and shows the extreme beauty of their coloration to perfection. Equally beautiful is the herd of Indian Spotted Deer (*Cervus axis*), whose dappled hide glistened with a golden shimmer as bright as though they were cropping the herbage in a Bengal jungle. Of the Rusine Deer, the Indian Sambar (*C. unicolor*) is represented by some magnificent examples, while there are also many specimens of the allied species, or race, commonly known as the Equine Deer (*C. equinus*). More rare, and therefore more interesting than either of these, is a small herd of Père David's Deer (*C. davidianus*), of Northern China, among which one buck was conspicuous for the great development of the characteristic back-tine of his antlers. Next to the undescribed species, perhaps the most interesting of the Woburn Deer is, however, a specimen of the little-known Chinese Water Deer (*Hydropotes inermis*), which dwells in the same paddock as Père David's Deer.

Unfortunately, however, this little Deer is of a very shy and retiring disposition, and, as it will skulk behind a tussock of grass till almost trodden upon, it is extremely difficult to get a satisfactory view. A short time ago the collection also boasted of a specimen of Michie's Deer (*Elaphodus michianus*), likewise from the North of China; but that animal has unfortunately gone the way of all flesh, and its skin (mounted by Rowland Ward) now adorns the museum at the Abbey. In the same paddock with Père David's Deer are likewise several Himalayan Musk-Deer (*Moschus moschiferus*). To see these little Deer bounding away, with arched backs, like so many overgrown Hares, reminded us of old Kashmir days, when Musk-Deer soup used to be a dish in the camp menu. Here again it is curious to notice these Himalayan animals flourishing side by side with the Spotted Axis from the burning plains of Bengal. The Elk have been already alluded to; but it may be mentioned that, although Mule-Deer (*Cariacus macrotis*) and Pampas Deer (*C. campestris*) have been tried, neither can be said to flourish.

To pass on to the Antelopes: the small herd of Sable Antelope has already received brief mention. In one of the large paddocks may be found a small herd of Eland, mostly consisting of immature animals, although one bull is adult. None of these Eland are in the fat condition often attained by old bulls, as exemplified by the magnificent stuffed specimen, shot by Mr. Selous, in the Natural History Museum. Apparently, however, these animals thrive best when not too fat. Probably they will breed at Woburn, and, if so, a large herd may be looked for. It is, however, unlikely that Eland-beef will ever form a commodity in the English market, although visions of forming such a trade were once entertained. Very striking objects in the same paddock are three fine specimens of the North African Leucoryx (*Oryx leucoryx*), whose white and chestnut coloration forms a striking contrast to the hues of the other denizens of the same enclosure. On grass this coloration is conspicuous, but on the white sands of the African deserts it is in all probability invisible at a short distance. From the same region comes a specimen of the Bubal or Bubaline Hartebeest (*Bubalis mauritanica*), and although this creature, with its long face, has, like its kindred, a somewhat mournful and dejected appearance, it appears to be in excellent condition. Another African type is

represented by a small Rietbok (*Cervicapra*), which appears to be either the South African Lesser Rietbok (*C. lalandei*), or the East African Bohor (*C. bohor*). Without exact information as to locality, it is, however, somewhat difficult to determine these species apart from comparison in a museum. Although of small size, this Rietbok is apt to be somewhat too free with his antlers, and visitors should consequently keep at a respectful distance.

By far the prettiest sight in the same enclosure is to watch the members of a herd of Blackbuck (*Antilope cervicapra*) rush by in a long string, one after the other, taking at intervals enormous leaps into the air. This they always do when approached, and indeed appear the very incarnation of sportive delight. At times the old buck will approach strangers, with his horns thrown back, his nose in the air, and his facial glands dilated, walking in the peculiar mincing manner which is so characteristic of its kind. Gazelles do not form a strong point in the collection, although there is a pretty little pair of the Dorcas (*Gazella dorcas*). The buck of these is remarkable for the peculiarly forward curvature of the tips of his horns, a feature which, although by no means uncommon in the species, is but seldom so strongly developed. The list of Antelopes closes with a small herd of Indian Nilgai (*Boselaphus tragocamelus*), which are allowed to wander freely about the park. It is somewhat curious that nearly all of the species which are allowed to roam freely have particular favourite haunts, near which they are almost sure to be found. In winter they are allowed access to open sheds, where abundance of food is supplied, and where they can find shelter if so disposed.

The smaller mammals do not find especial favour at Woburn, where attention is paid particularly to the ruminants; but one paddock is tenanted by a number of Wallabies, which appear just as much at home as in their native Australian bush; while here and there in the same enclosure a Mara, or Patagonian Cavy (*Dolichotis patagonica*), may be observed slyly making its way with its peculiar "looping" gait.

To do justice to the collection of Game and Water Birds at Woburn would require the pen of a professed ornithologist. Among the latter an especial feature is the unique collection of Swans, which comprises representatives of all the known species save two, one of these missing species being of extreme rarity.

It is a beautiful sight to see the assemblage of these birds on the Swan-lake, the species ranging in size from the lordly Trumpeter (*Cygnus buccinator*) of North America to the diminutive Coscoroba Swan (*C. coscoroba*) of Patagonia; both these comparatively rare species being represented by a large number of specimens. Black Swans (*C. atratus*) are of course well to the fore, as is also the still handsomer Black-necked South American species (*C. nigricollis*). The various species of Ducks are far too numerous to mention, but a Snake-bird or Darter (*Plotus*) cannot be passed over without notice. To see this strange bird perched on a tree-stump, and craning and twisting in a manner which only a Darter can, is a spectacle seldom to be witnessed, save by travellers in far distant lands. Of the Game Birds the name is legion, ranging from the lovely Peacock to the diminutive Californian Quail. Wandering through the well-kept coverts, one may be startled by the flashing metallic tints of a cock Monal (*Lophophorus impeyanus*) as it dashes by in head-long flight; while the next moment a Tragopan (*Ceriornis*) struts by in all the glory of its scarlet plumage and blue neck-frill. Pheasants of all kinds, from the gorgeous Soemmering's (*Phasianus soemmerringi*) and Reeves's Pheasant (*P. reevesi*) to the ordinary English species, are to be met with at every turn; while not only are there true-bred species, but likewise a host of hybrids, some of which are even more beautiful than their parents. Considering that the coverts are regularly shot, one wonders how all these lovely birds escape destruction; till one is told that those in which the exotic forms are chiefly kept are shot over only by the Duke and Duchess, who fire only at *Phasianus colchicus*. In the more open grounds are to be seen scores of Chukor (*Caccabis*), whose noisy chatter recalls days of Himalayan shikar.

In short, what with mammals and birds combined, a perfect paradise is opened to the observant naturalist at Woburn; and days and weeks might well be spent before half the information this splendid collection is capable of affording would be exhausted. That the ordinary public are not debarred from participating to a certain extent in the delights afforded to its owner by the collection is clear from the fact that on the August Bank Holiday the entire park and grounds are thrown open to all who care to come. Since, moreover, the park is

crossed by a public road, the pedestrian or cyclist has any day of the year an opportunity of seeing such of the animals as happen to be grazing or wandering within sight of that track.

THROUGH THE FOREST IN FINLAND.

By HERBERT C. PLAYNE (Clifton College) AND A. F. R. WOLLASTON
(King's College, Cambridge).

THE days from August 6th to August 24th of this summer we spent in a part of Finland which stretches from the north of the Gulf of Bothnia to a short distance within the Arctic Circle. Our attention was chiefly directed to birds, and some account of what we saw may be of interest. August is by no means a favourable month, and it is especially difficult to get good views of birds when they are silent and disposed to hide themselves, in a country which is so thickly covered with forest; consequently the number of species met with is no doubt far short of what it might have been at another time of year. However, we were in some respects lucky, and saw and heard enough to make us anxious to make use of the first opportunity of revisiting the same country in the earlier part of the summer.

Briefly, our journey was as follows:—By road from Torneå, along the banks of the river Kemi to Rovaniemi, where we stayed a week. From Rovaniemi we walked a few miles further north up the river Ounas, and then struck across the forest to Alkula on the river Torneå, and so southwards again.

In our walk through the forest we went much of the way without paths, and with a compass only as our guide, and naturally in such thick forest as covers that part of the country we often heard birds we could not see, and saw strange birds which hid themselves before we could identify them with certainty. The following is a list of the species we were able to identify:—

REDWING, *Turdus iliacus*; FIELDFARE, *T. pilaris*. Several seen.

SONG THRUSH, *T. musicus*. We only saw one.

WHEATEAR, *Saxicola ænanthe*. Very abundant wherever the country is fairly clear of trees.

WHINCHAT, *Pratincola rubetra*. Fairly abundant in clearings by the side of the river.

REDSTART, *Ruticilla phœnicurus*. Numerous.

BLUETHROAT, *Cyanula suecica*. One young bird near Rovaniemi.

LESSER WHITETHROAT, *Sylvia curruca*. A few near Rovaniemi.

WILLOW WREN, *Phylloscopus trochilus*. Abundant; occasionally to be heard singing.

GREAT TIT, *Parus major*. Only one seen.

MARSH TIT, *P. palustris*. Very abundant.

LAPP TIT, *P. cinctus*. Fairly abundant.

WAGTAILS, *Motacilla alba*. Very numerous. There were large parties of Yellow Wagtails consisting probably of *M. viridis* and *M. flava*. Several undoubtedly had no eye-stripe, and must have been *M. viridis*. Others had well-marked eye-stripes, and were not at all yellow on the crown.

TREE PIPIT, *Anthus trivialis*. Several seen.

MEADOW PIPIT, *A. pratensis*. Seen occasionally. A Pipit which was numerous in some of the swamps in the forest may have been *A. cervinus*, but we could not get a good view of it.

GREAT GREY SHRIKE, *Lanius excubitor*. Two were seen by the road near Rovaniemi.

WAXWING, *Ampelis garrulus*. We came upon a large party of these birds in the forest on the morning of the day on which we reached Alkula. They were very tame, and took up conspicuous perches on the pine trees all round us, uttering a curious little chattering sound. One was seen to dart off the top of a pine tree in chase of a dragonfly, as if in play.

SPOTTED FLYCATCHER, *Muscicapa grisola*. Abundant.

SWALLOW, *Hirundo rustica*. Numerous.

HOUSE MARTIN, *Chelidon urbica*. Numerous. A party of these birds, with a few Swallows, were seen flying southwards out of sight of land over the Gulf of Bothnia on August 31st.

SAND MARTIN, *Cotile riparia*. Numerous.

SISKIN, *Chrysomitris spinus*. Fairly abundant.

HOUSE SPARROW, *Passer domesticus*. Numerous.

CHAFFINCH, *Fringilla cœlebs*. Common.

LESSER REDPOLL, *Linota rufescens*. A few seen. Some other birds in the forest, which were probably *L. linaria*, were not identified with certainty.

YELLOW BUNTING, *Emberiza citrinella*. Very common.

REED BUNTING, *E. schoeniclus*. Common near the river.

SKY LARK, *Alauda arvensis*. Only seen once.

SIBERIAN JAY, *Perisoreus infaustus*. We met with this bird in parties of two or three on two or three occasions during our walk through the forest. They picked up worms from the ground close to us.

MAGPIE, *Pica rustica*. Very common.

HOODED CROW, *Corvus cornix*. Very common.

RAVEN, *C. corax*. Seen on one day only.

SWIFT, *Cypselus apus*. A party of three flew over Rovaniemi on August 13th.

GREAT BLACK WOODPECKER, *Picus martius*. Quite abundant; we saw several and heard others. It is a very noisy bird, and makes some most curious sounds. The forests of this part of the country must be a paradise for Woodpeckers, as the dead trees harbour numerous insects; but we only saw two species.

GREAT SPOTTED WOODPECKER, *Picus major*. Abundant.

OWLS. We saw Owls flying on three occasions, but could not determine their species. Many are to be seen nailed to doors of houses, often too much spoiled for identification. We saw *Syrnium aluco*, *S. lapponicum*, and *Nyctala tengmalmi* treated in this way.

ROUGH-LEGGED BUZZARD, *Archibuteo lagopus*. Very abundant.

GOLDEN EAGLE, *Aquila chrysaëtus*. One came close to us near Rovaniemi pursued by two Rough-legged Buzzards.

SPARROWHAWK, *Accipiter nisus*. Fairly numerous.

MERLIN, *Falco aesalon*. One seen.

KESTREL, *F. tinnunculus*. Common.

OSPREY, *Pandion haliaëtus*. Quite abundant; we sat one day on a rock among some rapids while a pair of Ospreys were catching Grayling quite near to us. They carried the fish they caught far away over the forest, probably to feed young.

GREY-LAG GOOSE, *Anser cinereus*. On a small lake in the forest were thirteen Geese which seemed to be of this species, as far as we could see.

WILD DUCK, *Anas boschas*; TEAL, *A. crecca*. Common.

PINTAIL, *A. acuta*. Several at Rovaniemi.

GOLDENEYE, *Fuligula clangula*. Very numerous.

RED-BREADED MERGANSER, *Mergus serrator*. Abundant.

The river at Rovaniemi was quite crowded with duck, and we only had to sit by the side of the rapids to see Ducks and Divers floating down stream within quite a short distance of us. When they reached the end of the rapid water they seemed to fly up stream and float down again.

WILLOW PTARMIGAN, *Lagopus albus*. Abundant.

CAPERCAILLIE, *Tetrao urogallus*. Several were seen in the forest.

COMMON SNIPE, *Gallinago caelestis*. Put up occasionally in some of the swamps.

DUNLIN, *Tringa alpina*. One flock was seen on the river Torneå.

TEMMINCK'S STINT, *Tringa temmincki*. On an island near Rovaniemi we found three young birds of this species having a little down still showing on the back of the head and forehead. One of them let us stand well within six yards of it for some time, so we had no difficulty in identifying it.

COMMON SANDPIPER, *Totanus hypoleucus*. Numerous along the banks of the rivers.

REDSHANK, *T. calidris*. Seen occasionally.

GREENSHANK, *T. canescens*. One seen.

CURLEW, *Numenius arquata*. Abundant.

ARCTIC TERN, *Sterna macrura*. Several at Torneå.

COMMON GULL, *Larus canus*. A few seen at Torneå.

LESSER BLACK-BACKED GULL, *L. fuscus*. Numerous.

BLACK-THROATED DIVER, *Colymbus arcticus*. Several were to be seen on the river near Rovaniemi. It was interesting to compare their method of diving with that of the diving Ducks; the Diver seems to sink into the water, making scarcely a ripple.

When out of sight of land in the Gulf of Bothnia, on August 31st, several Wagtails, both White and Yellow, came on board the steamer and rested for a short time. The weather was fine, and there was scarcely any wind.

In the North Sea, on Sept. 4th and 5th, many birds came on board of the following species:—Sept. 4th, White Wagtail, Willow Wren; Sept. 5th, Wheatear, Kestrel, Whinchat, Oystercatcher, Redstart, Pied Flycatcher. Sept. 4th was a very bright day, with no wind, but on the 5th there was a good deal of rain and a little more wind. When the birds left the ship to continue their journey they often flew quite close to the water until out of sight.

CURIOUS EXPERIENCES IN BIRDS' NESTING.

By DR. R. WILLIAMS
(Of Kingsland, Herefordshire.)

As I have resided for many years in a part of Herefordshire favourably situated for observing the nesting habits of our commoner birds, several curious instances have come under my personal observation which I think are worth recording.

In May, 1889, whilst strolling through a small wood with a keeper I discovered a Blackbird's nest situated in a depression in the ground, in just such a position as a Sky Lark's might occupy. The keeper remarked that he had found several other Blackbirds' nests in this wood in similar positions. Within a few hundred yards of the first nest we found two Thrushes' nests, also on the ground, the edge of the nests being level with the surface. The wood abounded in thickets and small fir trees; but these more favourable sites contained very few Blackbirds' or Thrushes' nests. On enquiry, I learnt that the proprietor, having found that this wood was a nesting stronghold of these species, had made systematic raids on their nests in consequence of the havoc made by the birds on his fruit. I think this fact suggests why these birds had departed from their usual habit in their choice of nesting sites. Profiting from experience, they had selected safer positions.

As regards the Common Sandpiper, I think the following facts will show that this species also profits by experience, and occasionally varies its choice of nesting sites. In May, 1886, just when these birds were commencing to sit, we had a very heavy rainfall, heavier than any remembered by my father, who is over eighty years of age. The land on each side of the river running near my house was under water. The Common Sandpiper usually nests on patches of gravel thrown up by the water, and more or less covered with docks and other weeds. These places being flooded, the nests were swept away and destroyed. On the subsidence of the flood, the Sandpipers built again on their old sites, only to find their nests swept away by another flood. In the nesting season of the following year (1887), wishing to secure a few clutches of Sandpipers' eggs, I searched in the usual places for a whole morning without success. But as I observed only single birds and no pairs, I concluded the hens were sitting

somewhere in the neighbourhood. The next day I accidentally came upon a Sandpiper's nest containing four eggs, the nest being placed at the foot of a willow fully 100 yards from the river. This discovery put me on the right track, and I found six more nests in various positions, all a long way from the river. Two were under bushes, two in grass fields, and in each instance on the highest part of the respective meadows. One was situated by a rack close to the keeper's house, some forty yards from the river. It was at least thirty feet above it, on the side of a very steep ascent. Another nest occupied a most curious position: the Sandpiper had built on the head of a pollard willow, and the nest was only discovered by an angler striking the tree and flushing the bird. From May, 1886, the date of these floods, until 1889 the Sandpipers continued to nest at some distance from the river. In my opinion this proves conclusively that the birds remembered former calamities, and made use of their dearly-bought experience by choosing positions inaccessible to the highest flood. In 1889, however, I found the birds had resumed their usual nesting sites close to the river.

I once saw a Wood Pigeon's nest placed in the branch of a tree resting on the ground, the nest being only raised a few inches from the ground, with the grass rising above it.

Moorhens often select odd nesting-places. Some years ago I found a nest in a hawthorn-bush near a pool, the nest being placed some ten feet from the ground. In August, 1889, I saw another nest placed in the middle of a large pool. The water was exceptionally low, being only some nine inches in depth. The bird had laid a foundation of sticks at the bottom, and built up the nest so that it stood at least a foot above the water's level. It was a very substantial structure and quite different from the usual nests built by these birds.

Towards the end of April, 1888, I had a curious experience with regard to a Carrion Crow's nest. Whilst strolling along the river Arrow I noticed a nest of this bird placed high up in a large poplar. The nest evidently contained well-fledged young birds, judging by the noise they made. These the parents were busily employed in feeding. Whilst passing the nest shortly afterwards I noticed that a Kestrel and the two parent Crows, evidently quarrelling, flew out of it. A fortnight later when repassing the nest I saw a Kestrel fly from the tree, and then I noticed that

there was a large nest in the same tree placed some twenty feet below that of the Crows. This I concluded was the Kestrel's nest. I was surprised to see nothing of the parent Crows, as it was too early for the young birds to have flown. The next day, however, the mystery was solved. I sent my groom up the tree to get the Kestrel's eggs; but on his climbing the tree we were surprised to see a Kestrel leave the higher nest. This was found to contain five very handsome Kestrel's eggs. My man had used the lining of the nest to pack the eggs in, and this I found to consist of the pen-feathers of the unfortunate young Crows. The Kestrel had not only annexed the Crows' nest, but had evidently eaten the young birds. Some three weeks later the female Kestrel was shot by the owner of the land. I sent my man to examine the nest again, and he found a second clutch of four eggs exactly resembling the first clutch. I have both clutches in my collection.

In 1892 a fact came under my observation tending to prove that Cuckoos hunt for nests wherein to deposit their eggs before they are ready to be laid. My son informed me one day that he knew where a Cuckoo was going to lay. He said he had seen a Cuckoo fly out of a hedge, which on examination he found to contain a Hedgesparrow's nest ready for eggs. The boy's expectation was realised. He visited the nest repeatedly, and one day announced that the Hedgesparrow had begun to lay. Three days later he brought me the contents of the nest, consisting of one Cuckoo's egg and the clutch of Hedgesparrow's eggs.

I have at various times met with eggs of different species in the same nest. I was once shown a Nuthatch's nest in a hole in an apple tree close to a cottage door. On opening the hole I found three Nuthatch's eggs, and four Coal Tit's eggs lying in the nest of the latter bird. Beneath this was lying the Nuthatch's nest consisting of the usual collection of leaves, bark, &c. The owner of the place said that a pair of Nuthatches had for years nested in this hole, but this year it was taken possession of by a pair of Coal Tits. Then the Nuthatches arrived and drove the Tits away, and had evidently commenced to lay, when, for some reason, the owner shot the female Nuthatch. The Tits then returned and reoccupied the nest they had already built.

In 1894 I found a Blue Tit's nest in a hole in an apple tree, the female bird lying dead beneath it. My son cut out the nest,

and found it contained ten Blue Tit's eggs and one Nuthatch's egg. Some little time afterwards I received six more Nuthatch's eggs from the same hole. The birds had finished laying in spite of the enlarged hole, which they had plastered up with mud.

In 1893 I found that a Stock Dove had taken possession of and laid one egg in a hole in a tree which had frequently been used as a nesting place by a Barn Owl. About a week later a Barn Owl flew out of the hole, and ten days later my son found that the Owl was sitting on four of her own eggs and that of the Stock Dove, having driven the latter away.

I have met with other curious combinations of eggs in the same nest, such as Jackdaws' with Starlings', Starlings' with Stock Doves', Robins' with Starlings' (the nest being in a hole in a tree), Great Tits' with Redstarts', Great Tits' with Tree Sparrows', Whitethroats' with Lesser Whitethroats', and Moorhens' with Coots'.

I once found a Coal Tit's snug nest built in an old Thrushes' nest.

A little girl once brought me a Whitethroat's nest containing a tiny egg about as big as a "caraway comfit." She said she had watched the nest for some time, and finding that no more eggs were laid, and that the bird continued to sit, she brought the nest away. Could this be the abortive attempt of a hen without a mate?

In 1890 I found a Kingfisher's nest under unusual conditions. The bank selected had been worn away by the river until it had come close to the footpath, and underneath this the nest had been placed. The eggs, which were hatching out, lay in the bare soil of the hole. This is the only example of the kind I have met with, as in my experience the Kingfisher always makes a lining of bones before commencing to lay.

The Wood Warbler usually makes a domed nest; but I once found a nest of this species the top of which was formed by the root of a tree.

In 1886 a keeper pointed out to me what he thought was a Jay's nest. His son climbed the tree to examine the nest, from which a large bird flew out. To our astonishment, he brought down five warm Pheasant's eggs, and it was undoubtedly the old Pheasant which had flown out. Later the keeper showed me some birds which were the offspring of a cock Pheasant and a

domestic hen. He then showed me a still more curious thing: taking me to a box, he lifted the lid, and here I saw a cat suckling some tiny blind Ferrets.

In 1890, whilst walking near the river Lugg, I heard a Carrion Crow making a great outcry in an adjoining field. On approaching the spot I found that the bird was making frantic darts at some object near her nest, which was placed in an elm at least sixty feet from the ground, and which, as I knew, contained young. Presently I saw something, which I eventually identified as a large Stoat, run down the trunk, pursued by the old bird. The Crow came out victorious in the encounter; but I was astonished to find that a Stoat could climb to such a great height.

In the spring of this year (1896) my son went to a large rookery, containing at least five hundred nests, to get a few clutches of eggs. Curiously enough, the first nest he examined contained four eggs of the Tawny Owl.

Some years ago I found a Jay's nest in a very curious situation: in a small standard oak there was an old Squirrel's dray, and a foot above this was the nest of a Ring Dove. The Jay's nest was placed between the two, being built upon the Squirrel's dray, so that the Ring Dove's nest formed its roof.

NOTES AND QUERIES.

MAMMALIA.

Pine Marten in Lancashire.—On June 15th I was out bird-nesting in the larch woods on the hillside above Tilberthwaite Ghylls, Coniston, North Lancashire, when I came across a Pine Marten (*Martes sylvestris*). I gave chase to it, when it took to the trees, and leapt from branch to branch as nimbly as a Squirrel. The hill being steep I was unable to keep pace with it, and so lost sight of it altogether. On Sept. 10th I saw another on Lingmoor, above Elterwater, Westmoreland, and was shown on the same date the skin of a young one that had been trapped in August last by a shepherd in Langdale.—JOHN R. DENWOOD (Cockermouth).

Squirrel with Dark Tail in Autumn.—I have read with interest Mr. Ruskin Butterfield's communication on a Squirrel with dark tail in August. I was taking shelter from a shower on the 21st of this month (on this date I was also attracted by the congregation of Peewits) when quite close to me I saw a Squirrel run across the pathway, and, crouching

for awhile under a neighbouring tree, finally climbed up and hid among its foliage. I observed that its tail was quite black. Mr. Butterfield states that he has never seen a Squirrel of this appearance in August before. Are Squirrels' tails normally this colour at any particular period of the year? The Squirrel to which I now refer was in the avenue belonging to Brambridge House, on the road between Winchester and Botley.—G. W. SMITH (College, Winchester). [See Zool. 1895, pp. 103, 150.—ED.]

Present Status of the European Bison.—While the Bison of North America is on the point of extinction, the European Bison, which is still found in Russia and the Caucasus, is sensibly decreasing in numbers, in spite of the efforts made for its protection by the Imperial Government. Herr Buchener, in a memoir on the subject recently presented to the Imperial Academy of Sciences at St. Petersburg, regards it as likely soon to share the fate of its American relative. In the forest of Bialowicksa, in the province of Lithuania, a herd of these fine animals has long been preserved, and forty years ago, namely in 1856, numbered about 1900, but of late years this has dwindled down to less than 500, and there is no encouraging sign of any material increase. Herr Buchener attributes the cause of this to continued "in-breeding" and the comparatively restricted area in which the animals are confined. In 1894 a hunting expedition to the Kuban district of the Caucasus was organized by the Grand Duke Michael, Prince Demidoff, and one or two other Russian sportsmen, and they came across a few Bison there, one of which was killed. Through the courtesy of Prince Demidoff, a photograph of this animal is now before us. If the Russian Government would only give instructions to have some of the Caucasian Bison captured alive and transported to Lithuania for the purpose of resuscitating the herd there, no doubt in a few years a marked improvement might be effected. The enterprise would necessarily be attended with considerable difficulty and great expense, but in view of the scientific importance which would attach to the result of the experiment, it would be well worth undertaking.

North American Weasels.—Dr. Hart Merriam, of the United States Department of Agriculture, has recently published a synopsis of the Weasels of North America, illustrated with five plates. He recognises one species of Ferret and no less than twenty-two species of Weasel as being at present known to inhabit North America. The former he places in the subgenus *Putorius* and the latter in the subgenus *Ictis*. Exactly one half of the twenty-two species of Weasel are described as new or hitherto unrecognised, a remarkable fact when we consider how actively the North American Fauna has been investigated of late years.

The Age of a Horse.—We learn from our French contemporary, 'La Revue Scientifique,' that a mare belonging to a Monsieur de la Ferronnays

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lately died at the age of thirty-seven years, and that another mare has just achieved a similar distinction by dying at the age of thirty-five years. Although Pliny supposed that a Horse would live sixty years, and Buffon has asserted that he saw one of fifty, the cases of longevity above referred to must be regarded as quite exceptional. One of the oldest Horses whose age was known for certain is reported to have belonged to an English Hussar regiment. It is said to have joined the service in 1833 at the age of seven years, and to have died in 1862, aged thirty-six.

The Fauna of the Arctic Regions.—The intense cold of the Polar regions forms an impenetrable barrier to the advance northward of animal life. None of the sailors of the 'Fram,' who got as far as 85° N., encountered any Whales, Seals, Walruses, or Bears between that and the 83rd degree of latitude, although they saw large Cuttle-fish as far as 85° N. During the three years of their expedition they managed to kill twenty-nine Bears, and these of course were most valuable to them, affording not only fresh meat, but at the same time warm clothing.

CETACEA.

Bottle-nosed Whale on Lincolnshire Coast.—A small specimen of the Bottle-nosed or Beaked Whale (*Hyperoodon rostratus*), about 15 ft. long, came ashore at Freeston, near Boston, towards the end of August last. Unfortunately the animal had been cut up and used for manure before I heard of it. I was, however, able to identify the species by means of a photograph which had been taken while the animal was fresh.—G. H. CATON HAIGH (Grainsby Hall, Great Grimsby).

Bottle-nosed Dolphin in the Esk.—An immature male of the Bottle-nosed Dolphin (*Delphinus tursio*) was killed in the Esk near Longtown about the 30th of July last. I obtained a photograph of the animal in the flesh, and preserved the skull for the Carlisle Museum.—H. A. MACPHERSON (Carlisle).

BIRDS.

Icterine Warbler in Norfolk.—On Sept. 7th I was fortunate enough to shoot an Icterine Warbler in the marram-bushes at Cley. It was too much damaged by the shot to determine the sex. The gizzard contained the remains of several earwigs. This makes the third specimen obtained in Norfolk.—ROBERT GURNEY (Sprowston Hall, Norwich).

Terns in Norfolk.—On August 21st, near Wells, I shot a specimen of the Black Tern (*Sterna nigra*). This I believe is the only specimen recorded this year of this graceful bird. On the same day I observed the Arctic, Sandwich, Lesser, and Common Terns in close company, and occasionally intermingling. Is it not rather unusual to see so many species of Tern within so small an area?—E. P. COOPER (Herne Hill).

Scandinavian Pipits.—The question raised by Mr. Cordeaux in his interesting remarks on Scandinavian Pipits, *viz.* whether the Alpine or Water Pipit (*Anthus spipoletta*) is found in Scandinavia or not, has often occurred to me. I am inclined to think that it is. The birds described by Seebohm as having the under parts scarcely differing from those of *A. spipoletta*, the streaks being nearly obsolete, and the colour of the breast pale chestnut-buff, were, I think, so much like *A. spipoletta*, that if they were not actually identical with that species, it would appear to be almost impossible to distinguish between *A. spipoletta* and some forms of *A. obscurus*, except by the colour of the outer tail-feathers—and even this seems to be not always a quite constant feature. Seebohm does not say precisely where his specimens were obtained, but we may gather that it was somewhere in Arctic Europe; and Mr. Cordeaux has found the same form of Pipit on the Varanger Fjord, and has described it more fully. Apart from the colour of the tail (doubtful), Mr. Cordeaux's birds agree exactly with the description of *A. spipoletta*, except that the under parts seem to have been a little paler. It is true that Seebohm says that his birds were connected by a series of intermediate examples with the typical form, and that the colour of the outer tail-feather remained quite typical; whereas the patch on the outer part of the outside tail-feather in *A. spipoletta* is white. But Seebohm treats the form of *A. obscurus* found in Great Britain as the typical one, and he makes no special mention of the form found on the Norwegian coast (birds in autumn almost exactly like ours do occur on the west coast of Norway), and known as *A. rupestris*; however, the birds Seebohm found, "together with the typical form, in the Varanger Fjord," which had "the ground colour of the under parts almost pure white," were doubtless *A. rupestris*, although this author says nothing of the greyness of the upper parts, and the more conspicuous light eye-stripe. The intermediate forms* which he refers to as connecting the typical *A. obscurus* with the form coloured very similarly to *A. spipoletta*, are apparently very rarely procured. A bird possibly of the form known as *A. rupestris*, killed on the Norfolk coast in February, now in my possession, has the crown, occiput, and cheeks changing to a decided clear grey, eye-stripe nearly white and conspicuous, back of a slightly greyer shade than our bird's, throat lighter, almost unmarked and with a warmer sandy tinge, under parts very slightly more distinctly marked. This is in comparison with a January-killed specimen from the east coast of Scotland. Seebohm concludes that the

* It is possible that these so-called intermediate examples were birds which, either from season or age, had not acquired their fully adult breeding dress. It should not be forgotten that *A. spipoletta* in winter has spotted under parts, and that remains of these spots are sometimes to be seen after the breeding dress has been assumed, and the ground colour of the under parts has become pinkish buff.

fully adult male of the Rock Pipit, like those of its very near allies the Water Pipit and the Pennsylvanian Pipit, has the under parts unspotted; but, from the rarity of such examples in collections, he was disposed to think that the fully adult plumage was only attained by very old birds in exceptionally sunny climes. But to me the rarity of these unspotted birds seems to be too great even to render the above solution a likely one; although we know that very old examples of *A. cervinus* have a tendency to lose the markings on the under parts. I made the following notes on *A. rupestris* in Norwegian Museums:—Christiania: Six examples in summer dress (June and July), adult, had under parts well spotted, though in one considerably and in another case a good deal less than ours, all a little less, and all with ground colour white. They are much greyer on upper parts than ours. No rufous tint. Three examples, autumn and winter, very like ours, though hardly as dusky on upper parts, lighter and less confusedly marked underneath. Trondhjem Museum: One, a grey bird; ground colour of under parts whiter than ours, but well marked; light eye-stripe apparent. Tromsø Museum: Adult female, Tromsø, July 31st, is a grey bird, white ground to under parts, fairly well and distinctly marked underneath and no vinous flush, light eye-stripe. These birds must surely represent the ordinary form of Rock Pipit found on the Norwegian coast. And it seems more reasonable to refer examples found on the north coast some way to the eastward (long. $30^{\circ} 50' E.$), agreeing in colour pretty closely with *A. spipoletta*, to the latter species. With regard to the colour of the outer tail-feathers, which presents the only difficulty, I may mention that I possess a skin of a Pipit, apparently *A. spipoletta*, labelled "Tiflis, May 15th, female," in which, while the patch on the outer tail-feather is very much lighter than that of *A. obscurus*, it is by no means pure white (as in south-western examples of *A. spipoletta*), but tinged, except at the extreme tip, with smoky brown. Wheelwright, who generally gave full and careful descriptions of the colours of birds the plumage of which had exceptional interest, does not help us much in the matter. He describes *A. rupestris* ('Ten Years in Sweden,' p. 322) thus:—"Colour above dark ash-grey, with dark brown spots, especially on the back; below whitish, with a rusty yellow tinge on the breast and belly, and grey-brown spots; only the outermost tail-feather with a whitish edge." He adds that it can always be distinguished from the British Rock Pipit thus: the spots on the breast in the latter are large and occupy one-half of the ground colour of the breast, while in *rupestris* they are more distinct, and very small, not occupying more than one-fourth of the ground colour; and moreover the ground plumage of *rupestris* is considerably richer. There is also a pale spot on the auriculars of *rupestris* not found in *obscurus*. Seebohm states truly that the Rock Pipit is little more than a coast form of the Water or Alpine Pipit. And while remarking that the European Alpine Pipit (*A. spipoletta*)

is a very local resident in most parts of mountainous Europe, but has not been recorded from Scandinavia or N.W. Russia, he expressly adds that the Alpine Pipit may almost be said to be a circumpolar bird, and that *A. spipoletta* var. *ludovicianus* breeds as far north as Alaska. The range of the intermediate eastern form (said to be common about Lake Baikal) has not perhaps been fully worked out. There is nothing improbable in a form which breeds in the Alps in Central Europe (I have seen *A. spipoletta* at an elevation of about 8000 ft.) turning up again on the coast beyond the Arctic Circle. On the contrary, it is not at all unlikely to do so—given suitable haunts. Would it be highly improper to consider that *A. spipoletta* of Europe is an alpine species, found also in summer in Eastern Arctic Scandinavia (as represented by the birds described by Seebohm, and found by Mr. Cordeaux on the Varanger Fjord), and that *A. obscurus* is a western coast form which in the northern part of its coast range approaches *A. spipoletta* more closely (*A. rupestris*, with a greyish head, a more distinct eye-stripe than the type, and with white ground colour to the under parts)? That Booth's birds, "found along the south coast [of England] from the second week in March till the latter part of April," were Arctic examples of *A. spipoletta* is very probable; but that they can properly be called Scandinavian Rock Pipits (*i.e.* examples of the form of Rock Pipit found commonly in Scandinavia) seems to me impossible. For it is granted that the unmarked breast and vinous under parts is rarely to be found in collections; I failed to find it in any of the three museums mentioned above, and it has only been observed in summer, as far as records go, pretty far to the eastward. Yet Booth wrote:—"Early in March I have shot several examples which plainly showed that its winter dress was identical [probably the white ground colour, which would certainly have been present even if the birds were only *A. rupestris*, was overlooked] with that bird [our own Rock Pipit], only a very few of the vinous feathers being visible at that time. As spring advances the vinous tint gradually spreads over the whole of the breast, and the back of the head and neck becomes a bluish grey." These birds, which Booth apparently found in fair numbers, could hardly have all been very old examples. Booth observed that they were in some seasons remarkably plentiful between Brighton and Worthing. They must have been common in the breeding haunt for which they were making. Where were they going to? Not to the Alps of Central Europe. Not to the west coast of Norway, for this is not the form of Rock Pipit found on that coast. Were they not more probably examples of the Arctic race of *A. spipoletta* going north to breed? One cannot now shoot (happily for some reasons) along the Sussex coast in March and April, or it would be worth while to try and get a few more examples. It is true that Booth failed to meet with them during his visits to the south coast for the three years immediately previous to publishing his catalogue, but he may have just

missed them; and this is hardly sufficient reason for thinking the birds have entirely abandoned the route. These are merely suggestions, for sufficient material does not seem to be available at present for a settlement of the question. But some solution of the problem as that indicated above is, I think, more reasonable than that arrived at by Seebohm, or to be gathered from his conclusion, *viz.* that *A. obscurus* ranges all along the west and north coast of Scandinavia as a dusky bird, and, becoming almost white on the under parts (ground colour) in the north, suddenly, in the north-east, develops a plumage entirely different to what is generally accepted as the type of *A. obscurus*, but resembling *A. spipoletta* in all but the colour of the outer tail-feathers; these examples being scarce, and found in summer actually on the same ground as the typical birds, with which they intergrade. My suggestion is to call these bright-coloured birds examples of an Arctic race of *A. spipoletta*, rather than of a Scandinavian form (it cannot be called the Scandinavian form) of *A. obscurus*. It would be quite as reasonable to do so, and, I venture to think, if not more correct, at least less confusing.—O. V. APLIN.

Honey Buzzard in Hertfordshire.—I have always understood that the Honey Buzzard, *Pernis apivorus*, is a rare bird, and as an immature specimen has been caught on my property here, it may be of interest to record the facts. On October 2nd my man, on going his rounds, came across a snared rabbit, of which the lower hind parts had been partly devoured. It was clear this was not the work of a Fox or a Pole-cat, and he baited a trap with the same rabbit at 6 p.m. He passed at 10 p.m., and the trap was as he left it. At 5.30 a.m., before the light was sufficient for him to discern what was in the trap, he found the bird. I mention the time of capture, for it seems strange that the bird should have been feeding between the hours named at this season. In the fourth edition of 'Yarrell's Birds' I see that there is a record of the Honey Buzzard having been taken "in a trap baited with a rabbit."—F. M. CAMPBELL (Rose Hill, Hoddesdon, Herts).

[The Honey Buzzard being a summer visitor to this country, Oct. 2nd seems an unusually late date at which to meet with it here.—ED.]

Rose-coloured Pastor in Hampshire.—Mr. W. Bradden, the well-known taxidermist of Guildford, informs me that a male specimen of this rare visitor was shot on May 4th in this year at Greatham, near Liss. It was found on an apple-tree.—JOHN BUCKNILL (Epsom).

Night Heron in Co. Cork.—During a visit this summer to my brother, who was stationed at Kilworth Camp for the manœuvres, I made the acquaintance of a Mr. F. Lucas. He very kindly presented me with the skin of an immature Night Heron (*Nycticorax griseus*). I regret to say he did not ascertain the sex when skinning it. He shot the bird in March, 1894, not far from the town of Fermoy, as it was feeding in

company with a Common Heron on the river Blackwater. My friend did not know what a rarity it was, and it was quite a chance that he had troubled himself to preserve it. It is a great pity that rare birds, in cases like this, should not be identified and properly preserved. — CHARLES BETHUNE HORSBRUGH (Richmond Hill, Bath).

Report on Migration.—At the recent meeting of the British Association, in the Zoological Section, presided over by Prof. E. B. Poulton, the Report of the Committee appointed for the purpose of drawing up a digest of the observations on the Migrations of Birds made at lighthouses along the British coast, was submitted. The Committee, which consisted of Professor Newton, Messrs. John Cordeaux, John A. Harvie-Brown, R. M. Barrington, W. Eagle Clarke, and Rev. E. P. Knubley, dealt, among other things, with the subject of intermigration between the south-east coast of England and the coast of western Europe, and pointed out that some entirely new facts had been ascertained in connection with this matter. It had been already shown that the more southern section of the eastern coast of England did not receive immigrants direct from northern Europe. There was, however, a considerable amount of migration of a particular description, and on the part of certain species, observed at the lightships and lighthouses between the Kentish coast and the Wash. During the autumn, day after day, a stream of migrants, often of great volume, was observed off the coast, flowing chiefly from the south-east to the north-west at the more northerly stations, and from east to west at the southerly ones, across the southernmost waters of the North Sea. From the stations off the mouth of the Thames as a centre, the birds either swept up the east coast, sometimes to and beyond the Tees, many proceeding inland as they went, or passed to the west along the southern shores of England. These important immigrations set in during the latter days of September, reached their maximum in October, and continued at intervals until November. They were renewed during winter on occasions of exceptionally severe cold, but the birds then passed to the westward along our southern shores. The Report also dealt with the meteorological aspect of the question, and stated that the importance attached to winds in connection with bird migration had hitherto been much overestimated. The conclusions to be drawn from a careful study of the subject were that the direction of the wind had no influence whatever as an incentive to migration, but that its force was certainly an important factor, inasmuch as it might make migration an impossibility, arrest to a greater or lesser degree its progress, or even blow birds out of their course.—An interesting discussion followed the reading of the Report.

Cuckoo: Mode of Feeding.—On June 13th I found a young Cuckoo (*Cuculus canorus*) in the nest of a Meadow Pipit on Silverhowe, Grasmere, Westmoreland. It was just able to fly, so I took it home and kept it for

about three weeks. I fed it chiefly on caterpillars, which it always killed by crushing them in its beak gradually from head to tail, then catching them by the middle again, with a backward jerk of the head, it swallowed them. This is a habit of which I have not found mention in any of the works on Ornithology that I am acquainted with.—J. R. DENWOOD (Cockermouth).

Great Snipe in Essex and Reeve in Hants.—On Sept. 3rd, when at Horham Hall, Thaxted, I secured a specimen of the Great Snipe (*Gallinago major*). It was flushed in a field of clover, and weighed precisely seven ounces. It is in the hands of Messrs. Williams, of Dublin, for preservation. They have informed me that the bird is an adult, and one of the most perfect specimens that has come under their observation. On Sept. 5th, at Hayling Island, I shot two Reeves from a flight of five, one adult and one bird of the year. The sex of the adult bird was unfortunately not ascertained, but in the opinion of Messrs. Williams (to whom I sent the skins only) the specimen is a male.—G. A. TEMPLER (Eldon Club, Lonsdale Chambers, Chancery Lane).

Ruff in Co. Sligo.—On Sept. 4th my friend Mr. C. Gallagher gave me a nice specimen of a male Ruff in the first year's plumage, which he had shot on a grouse-bog, a few miles from the town of Easky, Co. Sligo. It was a solitary bird, and so tame as to allow him to walk up within shot as it was standing on a little hillock in the bog. This is only the second specimen that I know of occurring in the county; the first (also a solitary bird) was shot by Mr. C. A. Little on his grouse-bog, five or six miles from the above-mentioned locality, and about the same date, in September, 1884. There appears to have been a small flight of Ruffs to Ireland this autumn, for Mr. E. Williams, of Dublin, had three specimens sent to him for preservation, and Mr. R. J. Ussher had two sent to him from Belmullet, Co. Mayo.—ROBERT WARREN (Moyview, Ballina).

Flight of Peewits.—On Sept. 29th I saw a congregation of Peewits that must have mustered quite 500 individuals. Their manœuvres were very interesting to watch; the flock divided into two parties, one flying south towards Southampton and the sea, the other alighting in a dense mass in a ploughed field. Once, without being disturbed, the whole of this party flew up a few feet into the air, wheeled and settled again in exactly the same spot. After watching them for half an hour, during which time they were joined by several birds from all quarters, I walked towards them, and it was not until I was within thirty or forty yards that they all arose screeching and followed the first party towards the sea. See "Notes from Hants," Zool. 1894, p. 296.—G. W. SMITH (College, Winchester).

Labrador Duck.—In the Museum at Amiens, in France, which at present is located in a temporary building, and visible only by ticket from

the mayor, there is a bird which is now nearly as valuable as the Great Auk—namely, a fine adult male of the extinct Labrador Duck (*Camptolaimus labradorius*). It was unknown to Mr. Deutscher when compiling his list of specimens ('The Auk,' vol. viii. p. 101), and will bring the number now known to be in existence to forty-two, having very likely been one of those sent to Europe by a birdstuffer at Brooklyn named John Akhurst (*op. cit.* x. p. 270). The faded ticket, so far as I could make out, contains no information beyond the bird's name; but the former denizen of St. Lawrence river is in excellent preservation.—J. H. GURNEY (Keswick, Norwich).

Sabine's Gull at Aberystwyth.—The late September gales brought an unusual visitation of this species. During the three days Sept. 24th to 26th six specimens were obtained a short distance to the south of this town, while two or three more were noted. All were in immature plumage, and passed into the possession of Mr. J. Hutchings, taxidermist, of this place.—J. H. SALTER (University College, Aberystwyth).

Little Gull on the Solway Firth.—On Sept. 16th a juvenile example of the Little Gull (*Larus minutus*) was brought to me by one of the Solway wildfowlers. He had shot it the previous afternoon, whilst hovering over the river Esk, in the immediate vicinity of the Solway Firth. On dissection it proved to be a male. The stomach contained a single beetle. The plumage of this specimen bears considerable resemblance to the nestling dress of the common Black-headed Gull (*L. ridibundus*). It is the fourth local specimen of *L. minutus* which I have had the pleasure of adding to the Carlisle Museum, and is a useful addition to our little series of this Gull.—H. A. MACPHERSON (Carlisle).

Manx Shearwater in Warwickshire.—Just before the commencement of the south-westerly gales, on Sept. 13th, an immature male *Puffinus anglorum* was shot at Earlswood Reservoir, Warwickshire. This, I think, is the second instance only on record of the occurrence of this bird in the Midlands, the only other instance of which I have any knowledge being one picked up exhausted in the Chandos Road, Edgbaston, within the boundaries of the city of Birmingham, on Sept. 5th, 1880.—F. CORNUM (7, Holloway Road, Birmingham).

White Stork in Warwickshire.—On Sept. 26th, the week of the furious south-westerly gales, a young male *Ciconia alba* was brought to me alive. It had been captured at Beacon Hill, near Coleshill, Warwickshire, by a labouring man, who stated that he saw two Storks in a field. His dog rushed towards them, when one flew away: the other defended itself from the attack of the dog, and while so engaged the man approached and seized the bird. He clumsily cut the primaries of one wing to prevent its escape. It was afterwards put into a dirty sack with a hole large enough for its head to come through, consigned to a carrier, and in this condition

poor *Ciconia alba* reached me nearly dead. It refused to take bread in any form. After a time, however, I induced it to take the bodies of small birds and strips of lean beef. Fat it did not like, and shook and munched a strip of meat which was half fat and lean until the fat was removed. It munched the bodies of birds between its mandibles, commencing always at the tail end and finishing at the head; when it seemed satisfied that it had broken all bones and killed its prey it was swallowed, always head first. It did not discover that a large basin contained water until I threw a bird's body in; the splash caused it instantly to seize at the body, but when it found its bill was in water it loosed the body and drank eagerly, expanding its gular sac and scooping the water down its throat. After satisfying its thirst it manifested its pleasure by standing in the basin on one leg, looking exceedingly droll. After it had become somewhat accustomed to me and its surroundings, and had had plenty of food, it became playful with some of the food I gave it, as a cat would play with a mouse, and while munching the body of a bird made a clattering noise with its bill. It seemed much puzzled at the number of stuffed birds in the cabinets by which it was surrounded, and seemed glad to get away from them. It particularly singled out and seemed frightened at a large Herring Gull which was on the ground floor of one of the cabinets. On the fourth day of its captivity I noticed that it was much out of condition, and next morning I found it dead. I am afraid there may have been something on some of the bodies from my work-rooms which did not agree with it. The *post mortem* revealed a shot-wound along the neck, which had torn the skin but not entered the flesh. On the same side of the bird a shot had struck at the base of the wing, but had not splintered the bone; the end of the same wing also appeared to have been struck by a shot. From these appearances I conclude that the bird had been shot at from below at a long range and struck, but not with sufficient force to bring it down at once. Eventually it alighted, and its companion would have remained with it until it regained full use of its wing, but they were discovered by the man who captured it. I do not think there is anything improbable in the man's story. Garner has recorded the occurrence of Storks in the neighbouring county of Stafford in his day; while Mr. Willis Bund has noticed their appearance in Worcestershire and Oxfordshire; this, however, is the first record for Warwickshire. The bird is quite a young one, with dull-coloured bill and legs, a frosty white appearance on the black feathers of the wings, and dark centres to the feathers of the back and scapulars.—F. COBURN (7, Holloway Road, Birmingham).

Red-necked Phalarope and Skuas near Hastings.—On Sept. 24th I had brought to me, in the flesh, an immature male Red-necked Phalarope (*Phalaropus hyperboreus*), shot while swimming in the sea at Pett Level; weight one ounce. It is almost exactly like the one I recorded in 'The

Zoologist' for October, 1895. On the same day an adult male Richardson's Skua (*Stercorarius crepidatus*) was picked up at Westfield, about five miles from Hastings. Its captor kept it alive for two days in a basket. It was in the moult, but had one long tail-feather. A Pomatorhine Skua was shot on the same day at Pett. Mr. Bristow, of St. Leonards, tells me he has had six or more Grey Phalaropes brought in to be set up, one of which came from Brightling, about fifteen or sixteen miles from the sea. I presume they would all have been driven there by the effects of the south-west gale on the 22nd inst. —G. W. BRADSHAW (Hastings).

Ornithological Notes from Scarborough. — On July 10th I had brought to me for identification an adult Hobby, which had been shot by a gamekeeper near Scarborough. I had not the opportunity of dissecting the specimen; but from the size of the bird I should say it was a female. It had the "hatching spot" on the abdomen strongly developed, and had apparently been sitting at no distant date. During the recent stormy weather a great migration of wading birds has taken place along the shore. Many flocks of Dunlin, Sanderling, Knot, Turnstone, Redshank, Golden, Green, Grey, and Ringed Plover were seen, some of them in great numbers. Oystercatchers, Whimbrels, and Curlews were also abundant, together with a few Bar-tailed Godwits. On August 27th I picked out of a bunch of Dunlin which had been shot on the North Shore a very nice Curlew Sandpiper, a bird of the year. On Sept. 1st an immature Little Stint was obtained, and two more, one an adult bird, were shot in company with Dunlin on Sept. 3rd. Another was obtained the following day, and a Greenshank was shot, and two others observed, on the same date. A Turtle Dove was obtained on the 7th, a bird which we do not usually see here. On the 23rd an adult male Grey Phalarope, in partial winter plumage, was shot while swimming in a quiet corner in Cayton Bay, about 2½ miles to the south of Scarborough. On dissecting it I found the gullet and stomach crammed with small maggots. On the same day I had two unknown birds reported on Filey Brig, which were identified by the man who saw them as being of this species on seeing the specimen in my possession; whilst on the North Shore a "web-footed Sandpiper," which was shot and subsequently destroyed, probably also belonged to this species; not, however, having seen the birds, I should hesitate to record them definitely as Grey Phalaropes. On Sept. 26th a strange sea-swallow was brought to me by a shore-shooter, who had shot it on Scalby Ness, a little to the north of the town. It turned out to be an immature White-winged Black Tern, in very nice condition. On dissection the stomach proved to be full of large maggots; the sex was indistinguishable. There are at present very large numbers of Common and Arctic Terns in both North and South Bays, the Arctic species being much more abundant than the others.—W. J. CLARKE (44, Huntriss Row, Scarborough).

Note on the Starling.—During the nesting season of 1895 a pair of Starlings nested in the aperture left for the flagstaff to pass up through at the top of an obelisk standing a short distance from my residence. I presume they are the same pair of birds that have bred in the same place for a number of years. In the season I mention I noticed that there were three old birds tending the young brood; and while watching them I noticed that the third bird was a very unwelcome visitor, as two of them frequently arrived at the entrance either together or nearly so, and when they found the third bird near the place they at once joined in a most determined chase until the intruder was driven far away from their nursery; but again and again the would-be godmother returned to the nest. I took it to be a hen bird, and thought it very probable that it had lost a former nest or a late partner. In answer to many enquirers I may state that I have never known a pair of Starlings rear two broods in one season.—JAMES SUTTON (Durham).

[Although Starlings do not as a rule rear more than one brood in a season, instances of their doing so have been recorded.—ED.]

Penguin : Derivation of the Name.—On this subject Prof. Newton, in his 'Dictionary of Birds' (part iii. p. 703), has a very instructive footnote. He remarks that of the three derivations assigned to this name the first is by Drayton in 1613 (*Polyolbion*, Song 9), where it is said to be the Welsh *pen gwyn*, or white-head . . . in opposition to which hypothesis it has been urged (1) that there is no real evidence of any Welsh discovery of the bird, (2) that it is very unlikely for the Welsh, if they did discover it, to have been able to pass on their name to English navigators, and (3) that it had not a white head, but only a patch of white thereon. With regard to the other two derivations as suggested (*l. c.*), I am not now concerned; but as to that above quoted, it may be observed that in Howell's 'Familiar Letters' there is one dated "Westminster 9 Aug. 1630," addressed by the author to the Earl of Rutland (Book II. Letter lv.), in which the following remarks occur on Welsh words found in America, including the word *Pengwin*:—"There are some who have been curious in the comparison of tongues who believe that the *Irish* is but a dialect of the ancient *British*; and the learnedest of that nation, in a private discourse I happened to have with him, seemed to incline to this opinion. But this I can assure your lordship of, that at my being in that country I observed by a private collection which I made, that a great multitude of their radical words are the same with the *Welsh*, both for sense and sound; the tone also of both the nations is consonant. For when first I walked up and down Dublin Markets methought verily I was in Wales." [Howell, be it observed, was an educated Welshman, a clerk of the Privy Council.] He adds:—"But my lord you would think it strange that divers pure Welsh words should be found in the new found world in the West Indies yet it is verified by

some navigators, as *granado*, bark, *Nef*, Heaven, *Lluynog*, a fox, *pengwin*, a bird with a white head, with sundry others, which are pure British." This observation, confirmatory of Drayton's view (1613), was most likely made (1630) quite independently of it, and it is to be regretted that, for our present purpose, Howell did not quote the actual words of the navigators to whom he referred. I confess that I do not see anything improbable in the suggestion that the word *pen-gwin* may have come to us through the agency of Welsh sailors trading with Newfoundland. On the contrary, it seems not unlikely that when viewing for the first time a Great Auk or Garefowl in its winter plumage in Newfoundland seas, they would liken it to the Razorbill or Guillemot in similar plumage, with which, under the general term *pen-gwin*, they would be very familiar on the Welsh coast, where these birds are abundant. So in the case of the New World Crocodile, we get the word "alligator" from a corruption of the name bestowed by Spanish sailors on an animal which they likened to a large Lizard—*el lagarta*.—J. E. HARTING.

Migration of Swallows in Dorset.—On Sept. 30th, at Swanage, I found a remarkable migration of young Swallows going on. This was the only day during my stay on which the wind was not westerly and strong: it had changed to a moderate breeze from the north-east. Along the coast south and west of the little town an incessant stream of birds was passing eastwards in an almost direct flight; the vast majority were young Swallows, with a very few old ones here and there, and an occasional party of House Martins. The latter seemed to keep in small groups together: if my eye caught one, there were sure to be others passing at the same moment. I walked in this great stream of birds to the headland where the coast suddenly trends to the north, to see whether they would keep the coast-line or venture out to sea. The morning was misty, and the Isle of Wight was not visible; and every bird, so far as I could see, turned northwards with the coast. I followed them to Swanage Bay, and found them still keeping the same direction, *i.e.* crossing the town and skirting the bay, a few only taking a short cut across it towards Poole Harbour. As on previous occasions, I came to the conclusion that very few of these birds cross to the Continent at a point so far westward as this, though here they would have a natural inducement to do so in the sharp turn of the coast northwards, which would pull them up, as it were, and make them consider what to do next. The next morning, however, I did actually see two small parties go direct over the sea southwards at a much greater height than that at which the other birds were flying, and regretted that they were too far away for me to determine whether they were old birds, whose experience might have prompted them to do what the others could not or would not risk. Later on this second day, while walking back to Swanage under the downs from

the neighbourhood of Corfe, I was astonished to find large parties of young Swallows flying in what I may call the wrong direction, i. e. *westwards*, under the hills. It was hardly possible that they were making for a roosting-place; it was not late enough in the afternoon. It struck me as not unlikely that these young and inexperienced birds, or many of them, are turned out of their natural route along the coast by the high and steep ridge of down which fences in Swanage Bay to the north with perpendicular chalk cliffs, and separates the whole Isle of Purbeck from the low heathy district inland. Of course they would cross this ridge at any point if they chose to do so; but repeated observations on this coast have led me to believe that they find their way with great caution, and are easily deflected from their course by any natural obstacle. I was confirmed in my conjecture by noticing that numbers of the birds were passing through the only *gap* in this ridge which offers itself between Swanage and Corfe, *viz.* that through which the road runs to Studland. The more obvious one at Corfe would solve the difficulties of such travellers as chanced to miss this one. I wished to investigate the matter more closely, but unluckily for me the migration suddenly ceased, and I walked the next day along the ridge from Corfe to Lulworth without seeing a single Swallow. It is perhaps worth noting that the wind had changed in the night to the west, and was blowing with some strength.—W. WARDE FOWLER.

FISHES.

Sunfish at Filey.—On August 22nd a nice specimen of the Short Sunfish (*Orthogoriscus mola*) was captured floating on the surface of the water, two miles south of the Bell Buoy, Filey. It measured $27\frac{1}{2}$ inches from tip to tip of fins, and 22 inches total length. After being exhibited at Scarborough for a short time it was purchased for some museum, the name of which I have been unable to ascertain.—W. J. CLARKE (44, Huntriss Row, Scarborough).

Large Pike in Co. Mayo.—An unusually large Pike (*Esox lucius*) was taken with a spoon-bait in Lough Conn, by Mr. F. Roberts, of Windsor. It measured 49 in. in length, 23 in. in girth, and weighed 35 lbs. Naturally such a trophy as this was considered worth preserving, and it has accordingly been sent to Mr. Cooper, of Radnor Street, St. Luke's, E.C., who sustains his late father's reputation as the best preserver of fish in the metropolis.

MOLLUSCA.

Oysters attacked by Starfishes.—The question whether Starfishes are inimical to Oysters has long been disputed, but it would seem from recently published researches that the truth of the assertion has now been proved. Dr. P. Schiemenz, in an illustrated article on the subject in the

'Journal of the Marine Biological Association' (vol. iv. no. 3), after reviewing the literature of the subject, shows as the result of experiments made by him how Starfishes contrive to work their way into the shells of bivalve marine mollusca, for the purpose of preying upon the inhabitants. So fully convinced is he of the destructive habits of Starfishes in this direction that he advises the owners of Oyster-beds to destroy every Starfish that can be found in the beds.

INSECTS.

The Giant Wood Wasp (*Sirex gigas*).—In August last a friend brought me a fine lively specimen of the above insect, taken in his greenhouse in Durham. It proved to be a female, having an ovipositor 1 in. long; antennæ $\frac{3}{4}$ in. long; longest legs over 1 in. long; total over all full $2\frac{1}{4}$ in.; expanse of wings over $2\frac{1}{4}$ in. It is the first specimen of the insect that I have ever met with.—JAMES SUTTON (Durham).

[An article on British Sawflies, with illustrations, will be found in 'The Field' of Feb. 18th, 1893; and a List of Norfolk Sawflies has been published by Mr. Bridgman, Trans. Norfolk Nat. Soc. vol. iv. p. 523.—ED.]

Larvæ of Death's Head Moth.—During August and the early part of September the larvæ of the Death's Head Moth (*Acherontia atropos*) were unusually abundant around Scarborough. Between Aug. 21st and Sept. 5th I had brought to me eight larvæ and one imago, mostly taken on potatoes, but two were reported as feeding on "tea-tree" and one on beetroot, the latter being, I believe, a somewhat unusual food. All the specimens were nearly full-fed when discovered, and changed to the pupa state very shortly after their capture. I recollect about five years ago there was a similar abundance of this species, when I had many specimens brought for identification.—W. J. CLARKE (44, Huntriss Row, Scarborough).

Wasps and their Uses.—The Wasp is generally regarded as emblematical of irritability and petty malignity; but it plays a beneficial part in the work of nature, as a note in the 'Irish Naturalist' testifies. A number of Wasps were seen by Mr. R. M. Barrington, of Bray, buzzing about his cows. Closer inspection revealed that they were all busy catching flies, and pouncing, with the rapidity of hawks after birds, on the flies as they tried to settle or rest on some favourite part of the cow. One white cow drew more Wasps than any of the others, because the moment a fly alighted it was seen at once against the skin. When a Wasp catches a fly it immediately bites off both wings, sometimes a leg or two, and occasionally the head. Mr. Barrington saw some of the Wasps when laden with one fly catch another, without letting go the first, and then fly away with both. There was a constant stream of Wasps carrying away flies, probably to feed the

larvæ in their nests, and returning again to the cows to catch more. In about twenty minutes Mr. Barrington estimated that between 300 and 400 flies were caught on two cows lying close to where he stood.

NOTICES OF NEW BOOKS.

Text-book of Zoology. By DR. J. E. V. BOAS, Lecturer in Zoology, Royal College of Agriculture, Copenhagen. Translated by J. W. KIRKALDY and E. C. POLLARD. 8vo, pp. i—xviii; 1—558. With 427 figures. London: Sampson Low, Marston & Co. 1896.

THIS work appears to have met with considerable favour on the Continent, judging from the fact that two Danish and two German editions had been published before the present English translation was undertaken. From this we are led to expect something superior to the ordinary type of zoological text-book, and we may say at once that we are somewhat disappointed. It may seem absurd to suggest that the subject-matter in a volume which extends to 550 pages is too much condensed, yet such would appear to be the case when we look for information on any given point. The fact is that of late years the number of specialists who work at particular groups has increased enormously, and the result of their labours has been to put us in possession of such a multitude of details that the ordinary text-book fails to afford an adequate survey of the general subject. It may be said, of course, that such a text-book is not intended as a complete survey, but merely as an introduction, paving the way for a more comprehensive general treatise. In this case it seems to us very desirable to give references to the most useful books and papers which deal with different sections of the subject, special groups, or important topics, such as classification, embryology, flight, moulting, parasitism, phosphorescence, &c., so that the student may know where to look for fuller information on any point with which he may be more immediately concerned. The chief defect in most text-books is the unequal treatment of the different groups, and this we suppose must always be the case when such a work is attempted by an author single-handed.

To some extent this is noticeable in the volume before us, and the defect might have been remedied in the way suggested, namely, by giving references to such works as would supply the missing information.

The book is divided into a General Part (pp. 1-80) and a Special Part (pp. 83-340), with an Appendix to each, the former relating to the resemblances and differences between plants and animals; the latter dealing with the *Tunicata* or Sea-squirts, which were formerly classified with the Mollusca, but are now considered to be related to the Vertebrata, with which they agree in the possession of a notochord, and in the position of the central nervous system.

The divisions of the "General Part" are Cells and Tissues (Histology); Organs; Fundamental Form and External Configuration; Embryology or Ontogeny; Affinities of Animals; Classification; Doctrine of Descent; Biology; Geographical and Geological Distribution.

The "Special Part" deals with the various divisions of the Animal Kingdom, classified as follows:—Subkingdom I. PROTOZOA, or Unicellular Animals. Subkingdom II. METAZOA, or Multicellular Animals, divided into Cœlentera (*sic*) *plus* the Sponges; Echinoderma (*sic*); Platyhelminthia *plus* the Rotifera; Nemathelminthia; Annelida *plus* the Polyzoa and Brachiopoda; Arthropoda; Mollusca; and Vertebrata *plus* the Tunicata."

In the translator's Preface we are told that in the German edition lists of the more important forms belonging to the German fauna are appended to the descriptions of the several groups; and that these have been replaced by species met with in the British Islands; the translators expressing a hope that this will be of special service to naturalists. Such lists, no doubt, would have been useful enough had they been more carefully prepared, but, unfortunately, they are too short, and show omissions of typical and easily procurable species. Nor is the information which is given concerning the species mentioned always correct. For example, under the heading *Alcidæ* (p. 457) we find the following curious blunder:—"Only one species of Auk, the Little Auk, *Alca alle*, breeds in Great Britain; the Razorbill, *Alca torda* (misprinted *tonda*), breeds in colder countries, but is occasionally found in the North Sea in winter."

Our ornithological readers will not need to be reminded that the Razorbill, during the nesting season, is one of the commonest of our cliff-haunting sea-fowl, and that the Little Auk, although familiar as a winter visitor, has never been known to breed anywhere within the limits of the British Islands.

We have failed to discover any proof of the statement in the Preface that "the needs of students of medicine, of veterinary surgery, and of forestry have been kept in view." On searching for information, for example, in regard to the internal parasites of Deer, and the treatment of park Deer thus affected, we could find no hints on the subject. The depredations of Hares, Rabbits, Squirrels, and Field-mice, in relation to forestry and agriculture, seemed to be a subject likely to be dealt with, according to the Preface, but in this also we were disappointed.

It would be easy, of course, to point out what this Text-book does not contain; but this would not be fair, either to the author or his translators; for the former has classified a large number of important facts likely to be useful to students of zoology, and the latter, by the preparation of a good translation, have earned the thanks of English readers who are unable to consult the original text.

A Geographical History of Mammals. By R. LYDEKKER, B.A., F.R.S. 8vo, pp. 400. With 82 illustrations. Cambridge University Press. 1896.

SINCE the publication (1876) of Dr. A. R. Wallace's two volumes on the Geographical Distribution of Animals in general, says Mr. Lydekker, in his Preface, the only works which have appeared relating to mammals from the same point of view are the small volume by Mr. Beddard,* and the series of papers by Mr. W. L. Sclater, printed in the 'Manchester Science Lectures,' ser. 5 and 6 (1874), and the 'Geographical Journal' (1894-95). But he has forgotten the excellent volume by Prof. Heilprin, on 'The Geographical and Geological Distribution of Animals,' published in the "International Scientific Series"; and we might

* 'A Text-book of Zoo-geography.' Cambridge Natural Science Manual. 1895.

also mention Dr. Hart Merriam's important paper (Proc. Biol. Soc. Washington, vol. vii. 1892) "On the Geographical Distribution of Life in North America, with special reference to the Mammalia." We find both these, however, included in the useful bibliography given at the end of Mr. Lydekker's own volume, which may be said to be a summary, fairly up to date, of existing knowledge on the subject, and in one respect in advance of the contributions by Messrs. Beddard and W. L. Sclater, who admittedly take but little account of fossil forms.

In an introductory chapter Mr. Lydekker reviews the schemes of previous writers for the zoological divisions of the earth's surface, and after pointing out what he considers to be defects in the several proposals, concludes by adopting the following modification, in which his three "realms" correspond with what he regards as the "three great evolutionary centres of mammals."

I. The Notogæic Realm.—1. Australian Region.

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|---|---|---------------------------|---|
| " | " | 2. Polynesian | " |
| " | " | 3. Hawaiian | " |
| " | " | 4. Austro-Malayan Region. | |

II. The Neogæic Realm—Neotropical Region.

III. The Arctogæic Realm.—1. Malagasy Region.

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| " | " | 2. Ethiopian | " |
| " | " | 3. Oriental | " |
| " | " | 4. Holarctic | " |
| " | " | 5. Sonoran | " |

The term "Holarctic," it may be observed, was proposed by Dr. Heilprin, at the suggestion of Prof. Newton, to unite Dr. Sclater's Palæarctic and Nearctic Regions under a common title; while the term "Sonoran" is equivalent to Dr. Blanford's "Medio-Columbian" Region. Dealing with these different regions in the order named, Mr. Lydekker proceeds with a consideration of their distinctive features, and gives a brief account of the more characteristic mammals to be found therein. In the course of his remarks various interesting problems are discussed, as, for example, the former connection of particular land areas, now widely separated by sea.

With regard to the date of the separation of Ceylon from India, for instance, Mr. Lydekker writes :—

“The numerous species of mammals common to the two areas show that this must have taken place at a very recent date, comparatively speaking; although at a period when several of the mammals now inhabiting Southern India had not yet occupied that portion of their distributional area.

“When discussing the possibility of a former land connection across the Bay of Bengal, between Ceylon and Southern India on the one hand and the Malayan countries on the other, Dr. Blanford was careful to point out that the ocean-bed afforded no evidence in favour of such a line of communication. This feature, together with certain marked differences between the mammals of the two areas, appears to afford a conclusive argument that these countries have never been much more closely connected than they are at present. Had any more extensive connection existed, we should surely expect to find Antelopes, Gazelles, and perhaps Asses, in the more open districts of Upper Burma; while the Bay of Bengal would scarcely have formed such a sharp line limiting the eastward range of Wolves, Foxes, Hyænas, and other mammals, as it actually does. This is more evident if fossil forms are considered, and these circumstances, together with the depth of the sea in the Bay of Bengal, seem to disprove the suggestion of Dr. Wallace (*op. cit.* p. 359) that a continuous tract of land formerly connected Borneo and the rest of Malaysia with the central parts of Ceylon, and extended eastwards to Hainan.”

Mr. Lydekker does not attempt a detailed description of the mammalian fauna of the Malay Peninsula and Islands, but selects that of the Bornean Group as an example of what may be called the typical Malayan sub-region, as distinct from Java, which differs markedly in its fauna from Borneo and Sumatra. His chief reason for selecting Borneo is that its fauna has been carefully worked out by Messrs. Everett and Hose, on whose authority he gives a list of the Mammalia, omitting, of course, introduced species like the Buffalo.

Mr. Lydekker has crammed a great number of facts into his small volume, but on several points of interest on which we have looked for information touching the geographical distribution of

particular mammals we have failed to find it. Curious to know what he might have to tell concerning the present range of the Lion in India, we could find (p. 272) only the following bare statement:—"The range of the Lion in this (the Oriental) Region is limited to India, not extending to the eastward of the Bay of Bengal [not anything like so far]; and as this animal was widely distributed during the Pleistocene in Europe, while it ranges all over Africa [this is not quite correct], it may be regarded as essentially a western type, or exactly the opposite of the Tiger." In view of our recently published remarks on this subject (Zool. 1896, pp. 281), the information here given strikes us as being uncommonly meagre and disappointing.

Similar vagueness of expression is to be found in relation to other animals, as, for example, to the Saiga Antelope, which we are told (p. 324) "is now confined to the steppes of Western Asia and Eastern Europe, but during the Pleistocene Epoch extended as far westwards as Germany, France, and England." For fuller information concerning the present distribution of the Saiga, Mr. Lydekker might have referred the reader to his own chapter on this species in his 'Horns and Hoofs, or Chapters on Hoofed Animals,' published in 1893.

We are sorry to observe that in the "list of mammals known to have inhabited the British Islands within the historic period" (pp. 349, 350), Mr. Lydekker has sanctioned the use of the barbarous term "Assogue," which was proposed only last year for the Stoat of Ireland. On its first publication (Zool. 1895, pp. 124-129) we took occasion to protest against its introduction into zoological literature, and pointed out that the spelling of an Irish name "as pronounced" does not make it English. It still appears to us that there is no good reason for its adoption, and much to be said against it.

Wild Life of Scotland. By J. H. CRAWFORD, F.L.S. Illustrated by JOHN WILLIAMSON. 8vo, pp. 280. London: John Macqueen. 1896.

LOVE of fishing and a taste for out-of-door life have led the author of this little book into picturesque parts of Scotland, and he discourses pleasantly of his experiences. By the burn-side,

on the moor, by the loch-side, or on the North Sea, Mr. Crawford seems equally at home, prepared to appreciate to the fullest the beauties of Nature, and possessing the knack of imparting his good spirits to others. His agreeably written chapters cannot be said to abound in original observation, nor is there much that can be called new in relation either to fishing or natural history; nevertheless there are many pages that will repay perusal.

Commenting upon a quotation: "The Salmon's back is fenced with tiny blue slates like the miniature roof of a house. Could anything match more exactly the blue slates with which our rapid streams abound?" Mr. Crawford observes:—"Were it not truer to say that the 'new run' Salmon wears the double livery of the migrant, adapted to both spheres. The glory soon departs, and he takes the muddier hues of the fresh water. Sometimes he covers himself with red and black spots, like a gigantic Trout. The marine forms of the shadowless sea are silvery, with a darker shade on the back, and generally without slates. If river forms took to the salt water they would put off their spots as of no further use. Examples of the brook Trout have been found, on emigrating to the sea, as a rule, to which there are exceptions, to assume the brilliant silvery hues of the migrating *Salmonidæ*, as well as the cross-shaped black spots. Mr. Harvie Brown remarked, June 12th, 1852, on having caught at Durness several so-called sea Trout from a sea-pool, or first pool at the mouth of the river, fresh water at low tide, salt or brackish water at high tide. From their silvery appearance they are known as sea Trout, but are the river form, acclimatised to brackish water, or periodically visiting the same between tides."

Writing of bird-life in Scotland, Mr. Crawford makes the following remarks about the nesting habits of the Wheatear, a bird sufficiently familiar to most of us as one of the earliest of spring migrants to appear:—

"The Wheatear reaches the Scots moors—for it is a migrant—as early as March. The apology for a nest, with its faint blue—almost white—eggs will be in many of the disused holes of his comrade the rabbit. They are easily found, because of his slovenly habit of leaving chopped pieces of bracken round the opening. As in the case of most of our hardier migrants, a few may remain with us all the year round."

On the South Downs of Sussex and Hampshire, where no bracken happens to interrupt the rolling turf-land for many miles, the nest of the Wheatear frequently escapes detection, owing to the number of holes available, and the difficulty of discovering for certain the particular one selected by the bird.

Referring to the variation in the number of eggs laid by different species, Mr. Crawford writes:—

“Where the risks are great, the precautions for the preservation and continuance of the species are exceptional, and there is no better indication and gauge than the contents of the nest. Twelve eggs, roughly, signify double the danger of six. Keeping this in mind as we turn to the sea birds, we find that the number of eggs is very much smaller than in the case of the land-birds. This holds almost universally, with perhaps the exception of some of the Ducks, whose nesting habits expose them to considerable danger.

“A very common number is three. This holds throughout the Gulls and their immediate kindred. The Terns’ nests have three apiece. This is well-nigh the maximum. In the case of the Skuas it is reduced to two. The Divers also lay two.

“In the case of the Petrels a limit is reached, beyond which further diminution is impossible. Indeed, the unit is so frequent that it may almost be regarded as the typical number. The Guillemot, the Razorbill, the Little Auk, the Puffin, the Shearwater, the Solan Goose, all deposit and sit on one egg at a time; and they discharge the duty with more than the gravity of a sitting hen on her sixteen. The unit of production must be taken as representing the unit of danger, and means that the sea-birds have so little to fear that, in a majority of cases, one egg is sufficient to maintain or probably slightly increase the species. Five is the usual number found in a land-bird’s nest. Four is not uncommon. Three is very rare, occurring with some Owls and Hawks. Two is confined to the Swift and the Nightjar, whose nests are very seldom found; and the Pigeon, which builds out of reach of many enemies. And one [with land-birds] is unknown. Starting from five with the land-bird, the tendency is upward, not downward; starting from three with the sea-bird, the tendency is downward, not upward.”

Writing of the Merlin, a characteristic bird on many Scotch

moors, and one which would be much commoner were it not so remorselessly persecuted by gamekeepers, Mr. Crawford bears witness to its courage and pertinacity in sticking to its prey even when approached at very close quarters. He says:—

“A Merlin on the ground ahead allowed me to come within a few yards. When at length he rose he seemed to be attached to an object much larger than himself, and much too heavy to carry beyond a short distance. As often as I approached he retreated, never succeeding in rising above a foot or lifting his burden free from the ground. Under the impression that he was trapped, I hurried forward. When he could no longer avoid me he made a supreme effort, but, too eager to watch his direction, dropped into the lake; and not till he was in danger of being drowned would he consent to loose his hold. When fished ashore the object proved to be a large Mistle Thrush. He attempts bigger prey than that; but what struck me was his determination not to be driven away. I had heard that the bird was the maximum of spirit in the minimum of size; and here was an illustration. It was that indomitable pluck, together with a tractable disposition, that made this little falcon such an excellent hawk.”

Turning over the pages, we come upon the following remarks anent Starfishes:—

“To some scalps which I recently visited speedy destruction was threatened by the Starfish, than which there are no greater pests in the sea. On each rakeful there were twenty or thirty overfed fellows, and as an evidence of their activity nine out of ten of the shells were empty. Many of the raiders were at work. The stomach was exerted so as to wrap the mussel round and force it open, when its contents were sucked out, and the shell dropped.”

This to some extent confirms the views of Dr. Schiemenz on the subject of the damage caused by Starfishes to oyster-beds, as noted (p. 389) in the present number.

